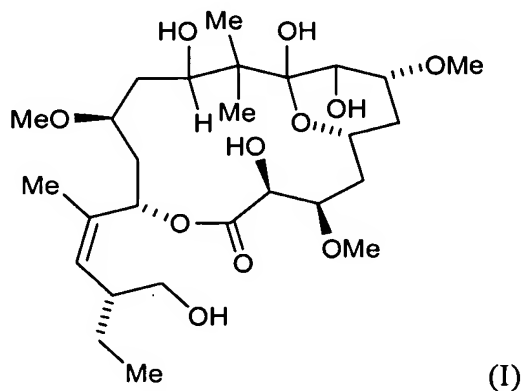


## AMENDMENTS TO THE CLAIMS

This listing replaces all prior versions and listings of claims in the application.

### Listing of Claims

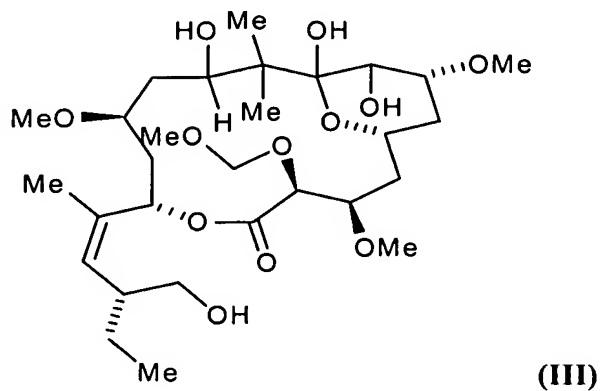
1. (Currently amended) A **synthetic pharmaceutical composition comprising a therapeutically effective amount of a** compound of formula:



**and a pharmaceutically acceptable carrier.**

2. (Cancelled)

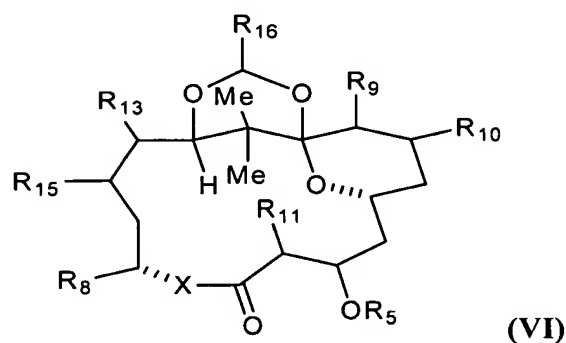
3. (Original) A compound of formula:



4. (Cancelled)

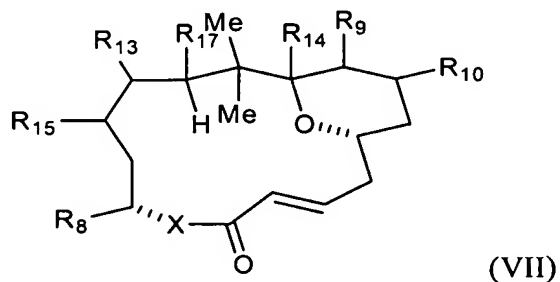
5. (Cancelled)

6. (Currently amended) A ~~composition comprising a~~ compound of formula:



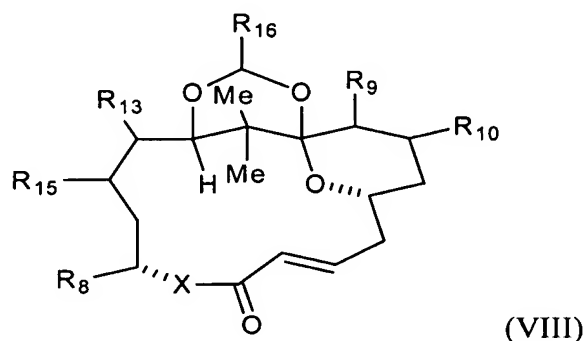
where R<sub>13</sub> is H or Me, where R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>15</sub> can be the same or different and are selected from the group consisting of H, Me, OR, where R and R<sub>5</sub> can be the same or different and are selected from the group consisting of H, Me, alkyl, or functionalized alkyl, where R<sub>8</sub>, R<sub>16</sub> can be the same or different and are selected from the group consisting of H, aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, and where X is O or NH and wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

7. (Currently amended) A ~~composition comprising a~~ compound of formula:



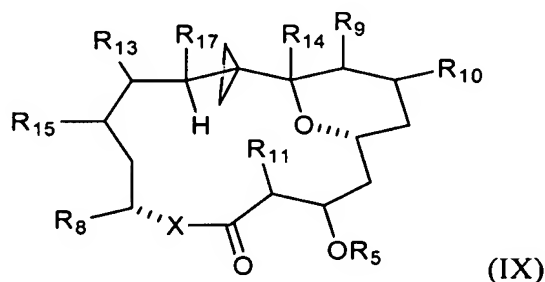
where  $R_{13}$  is H or Me, where  $R_{14}$ ,  $R_{17}$  can be the same or different and is selected from the group consisting of H, OH, or OR, where  $R_9$ ,  $R_{10}$ ,  $R_{15}$  can be the same or different and are selected from the group consisting of H, Me, OR, where R is selected from the group consisting of H, Me, alkyl, or functionalized alkyl, where  $R_8$  is selected from the group consisting of H, aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, where X is O or NH, and wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

8. (Currently amended) A ~~composition comprising a~~ compound of formula:



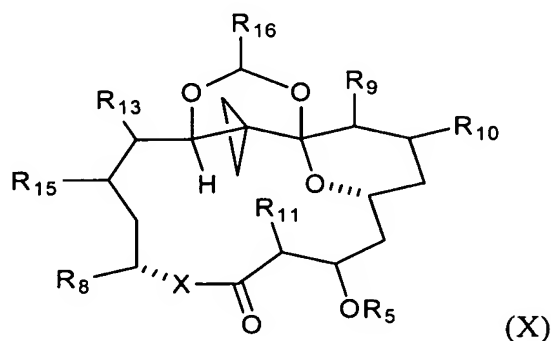
where  $R_{13}$  is H or Me, where  $R_9$ ,  $R_{10}$ ,  $R_{15}$  can be the same or different and are selected from the group consisting of H, Me, OR, where R is selected from the group consisting of H, Me, alkyl, or functionalized alkyl, where  $R_8$ ,  $R_{16}$  can be the same or different and are selected from the group consisting of H, aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, where X is O or NH, and wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

9. (Currently amended) A ~~composition comprising a~~ compound of formula:



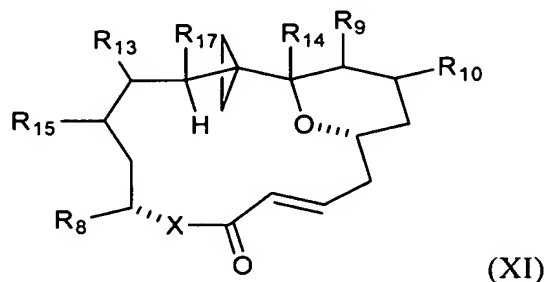
where  $R_{13}$  is H or Me, where  $R_{14}$ ,  $R_{17}$  can be the same or different and are selected from the group consisting of H, OH, or OR, where  $R_9$ ,  $R_{10}$ ,  $R_{11}$ ,  $R_{15}$  can be the same or different and are selected from the group consisting of H, Me, OR, where R and  $R_5$  can be the same or different and are selected from the group consisting of H, Me, alkyl, or functionalized alkyl, where  $R_8$  is H, aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, where X is O or NH, and wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

10. (Currently amended) A ~~composition comprising a~~ compound of formula:



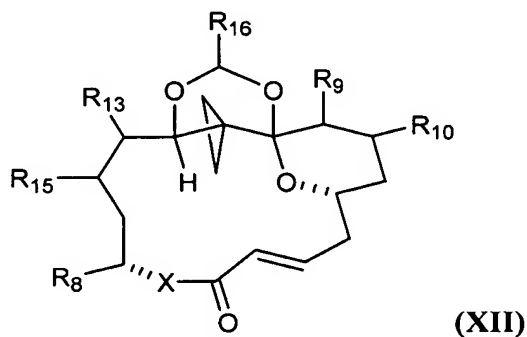
where  $R_{13}$  is H or Me, where  $R_9$ ,  $R_{10}$ ,  $R_{11}$ ,  $R_{15}$  can be the same or different and are selected from the group consisting of H, Me, OR, where R and  $R_5$  can be the same or different and are selected from the group consisting of H, Me, alkyl, or functionalized alkyl, where  $R_8$ ,  $R_{16}$  can be the same or different and are selected from the group consisting of H, aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, where X is O or NH, and wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

11. (Currently amended) A ~~composition comprising a~~ compound of formula:



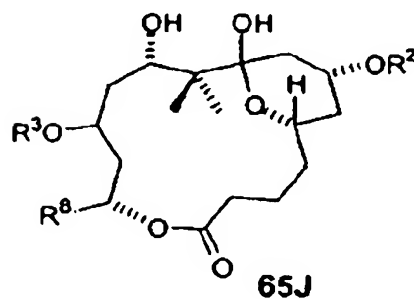
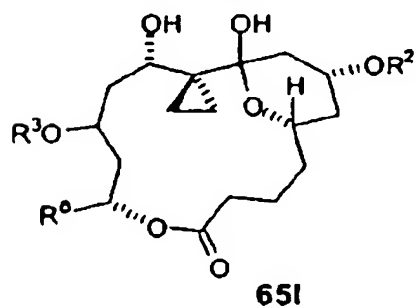
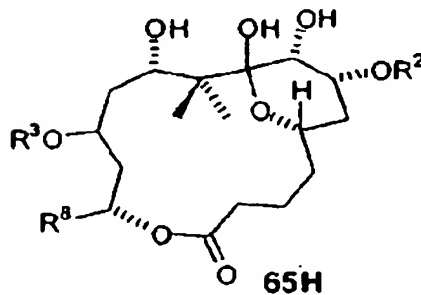
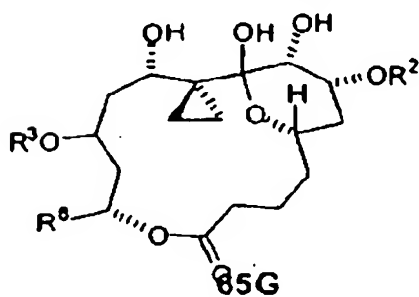
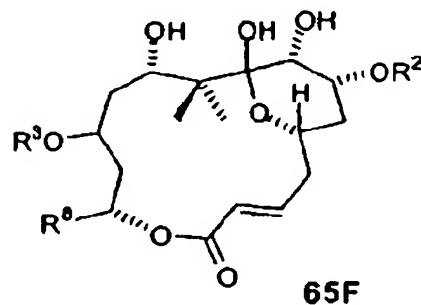
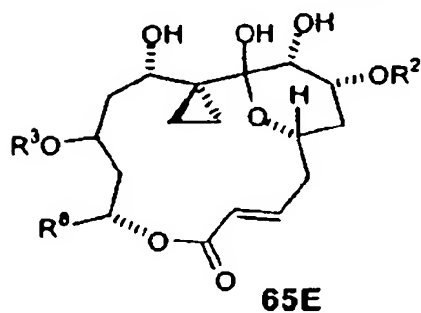
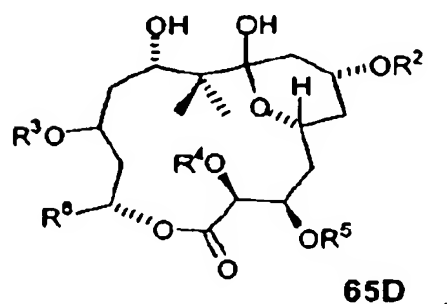
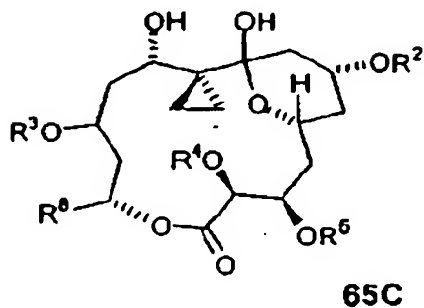
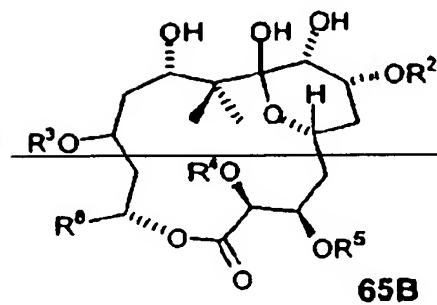
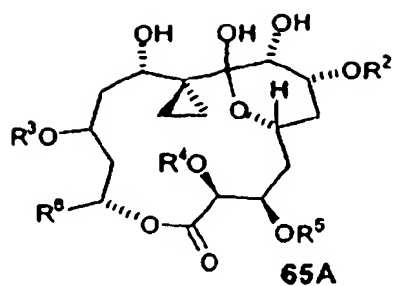
where  $R_{13}$  is H or Me, where  $R_{14}$ ,  $R_{17}$  can be the same or different and are selected from the group consisting of H, OH, or OR, where  $R_9$ ,  $R_{10}$ ,  $R_{15}$  can be the same or different and are selected from the group consisting of H, Me, OR, where R is selected from the group consisting of H, Me, alkyl, or functionalized alkyl, where  $R_8$  is H, aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, where X is O or NH, and wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

12. (Currently amended) A ~~composition comprising a~~ compound of formula:



where  $R_{13}$  is H or Me, where  $R_9$ ,  $R_{10}$ ,  $R_{15}$  can be the same or different and are selected from the group consisting of H, Me, OR, where R is selected from the group consisting of H, Me, alkyl, or functionalized alkyl, where  $R_8$ ,  $R_{16}$  can be the same or different and are selected from the group consisting of H, aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, where X is O or NH, and wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

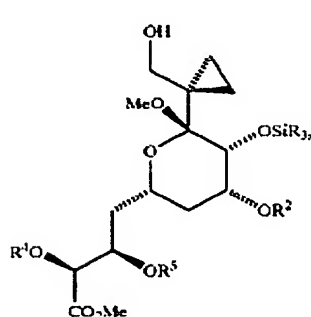
13. (Cancelled)
14. (Currently amended) A method for treating cancer comprising contacting a tumor cell within a subject with a compound of any one of claims ~~1 through 13~~ **3 and 6-12** for a period of time and in an amount sufficient to inhibit growth of the tumor cell.
15. (Currently amended) A method of suppressing growth of a tumor cell comprising contacting said cell with a compound of any one of claims ~~1 through 13~~ **3 and 6-12** for a period of time and in an amount sufficient to suppress growth of the tumor cell.
16. (Currently amended) A method of inhibiting growth of proliferating cells comprising the step of administering to the proliferating cells the compound of any one of claims ~~1 through 13~~ **3 and 6-12** for a period of time and in an amount sufficient to inhibit proliferation of the cells.
17. (Currently amended) A method of stabilizing microtubule formation in a cell comprising administering to the cell the compound of any one of claims ~~1 through 13~~ **3 and 6-12** for a period of time and in an amount sufficient to stabilize microtubule formation.
- 18-22. (Canceled)
23. (Currently amended) A compound selected from the group consisting of:



wherein  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$  can be the same or different and are selected from the group consisting of alkyl, and functionalized alkyl, and where  $R^8$  is selected from the group consisting of aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

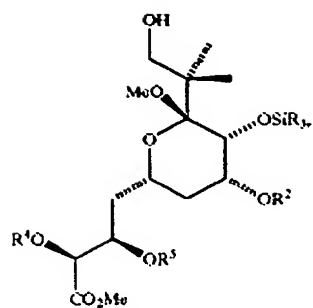
24. (Original) A method of producing Peloruside A comprising:

(a) oxidizing an alcohol function in a compounds selected from the group consisting of:

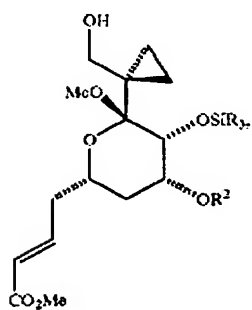




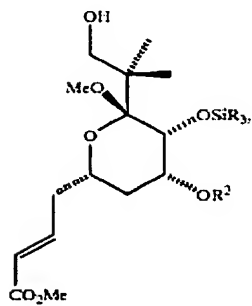
61B



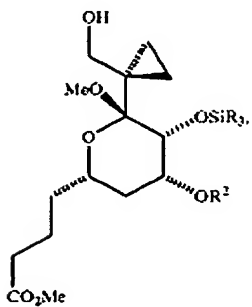
61E



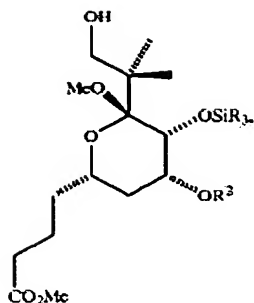
61F



61G



61H

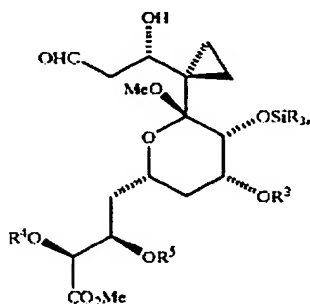


wherein  $R^2$ ,  $R^4$  and  $R^5$  are the same or different and are selected from the group consisting of alkyl, and functionalized alkyl, wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl, to obtain a compound having an aldehyde function;

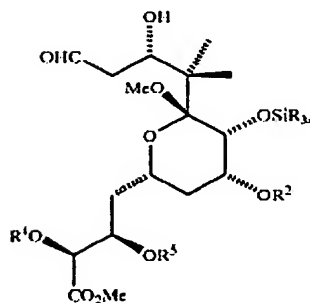
(b) reacting the compound obtained in (a) with an allylating agent;

(c) subjecting the reaction product of (b) to oxidative cleavage of the aldehyde to obtain a compound selected from the group consisting of:

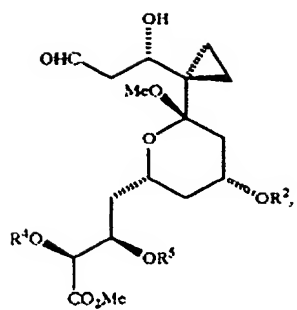
62A



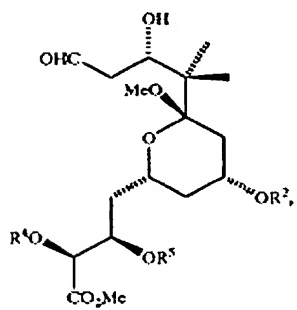
62B



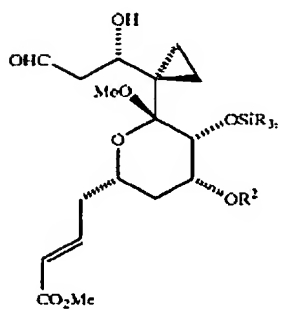
62C



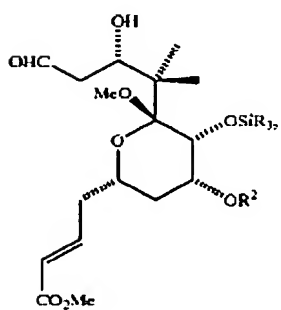
62D

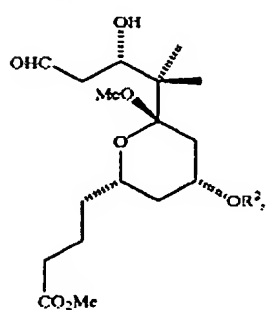
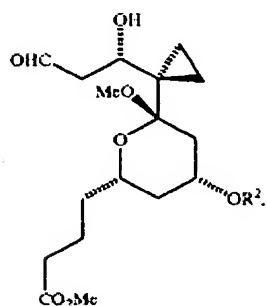
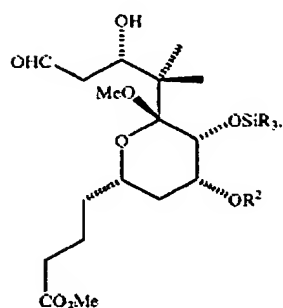
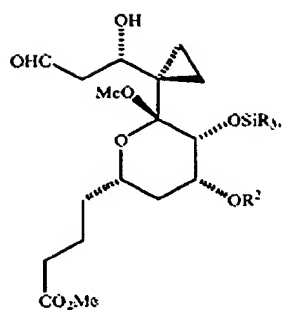


62E



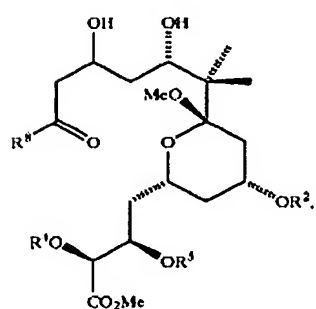
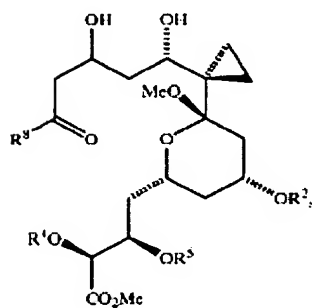
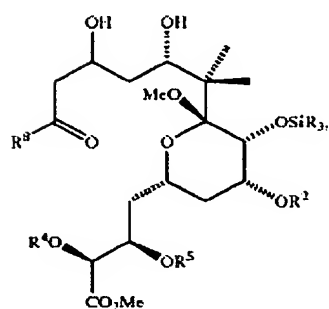
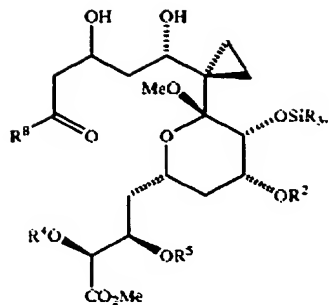
62F

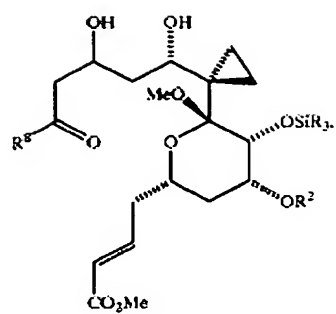




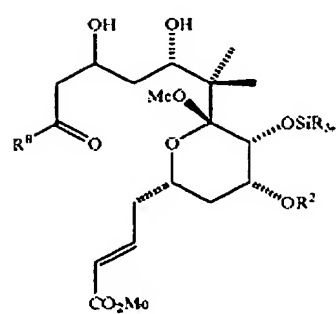
wherein  $R^2$ ,  $R^4$  and  $R^5$  are the same or different and are selected from the group consisting of alkyl, and functionalized alkyl, wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl;

(d) reacting the compound obtained in (c) with an enolate derived from a methyl or ethyl ketone to obtain a compound selected from the group consisting of:

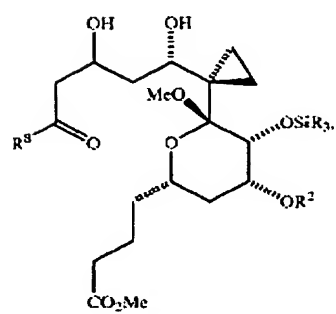




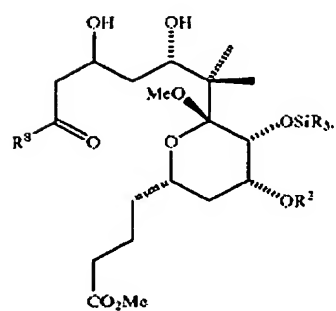
63E



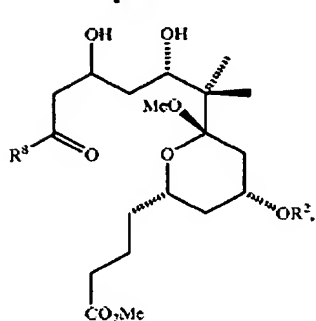
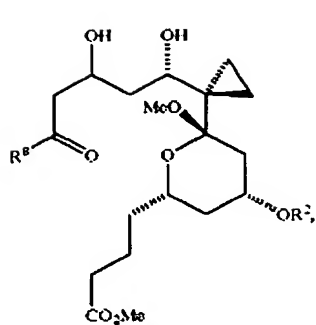
63F



63G

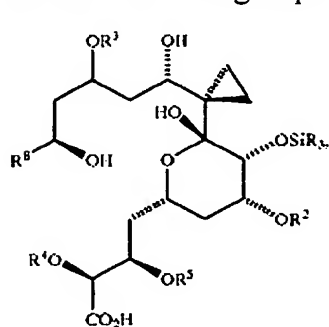


63H

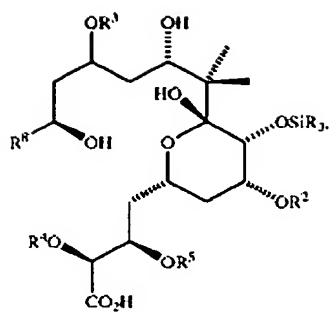


wherein  $R^2$ ,  $R^4$  and  $R^5$  can be the same or different and are selected from the group consisting of alkyl, and functionalized alkyl, and  $R^8$  is selected from the group consisting of aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl;

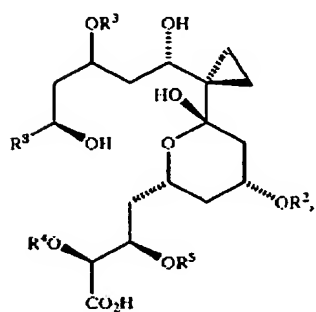
- (e) reacting the compound obtained in (d) with an alkylating agent to introduce and  $R^3$  group;
- (f) subjecting the compound obtained in (e) with a reducing agent to reduce the ketone group in the compound obtained in (e) to an alcohol;
- (g) converting the alcohol group of the compound obtained in (f) to an ester group;
- (h) subjecting the compound obtained in (g) to an agent that hydrolyzes the ester group of the compound produced in (f) to a carboxylic acid group to obtain a seco-acid compound selected from the group consisting of:



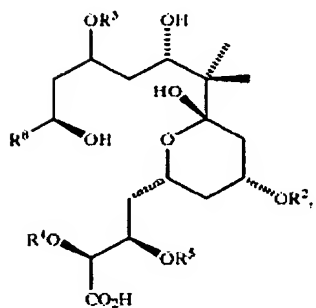
64B



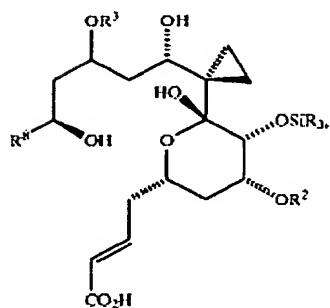
64C



64D

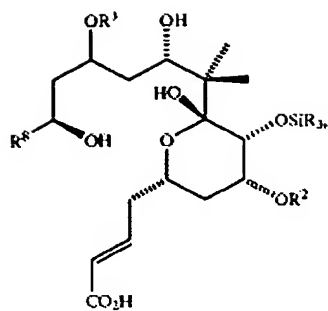


64E

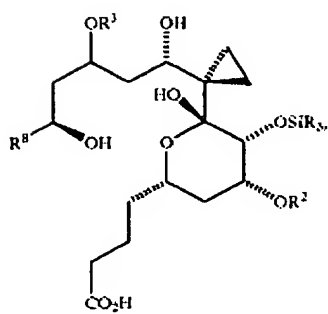




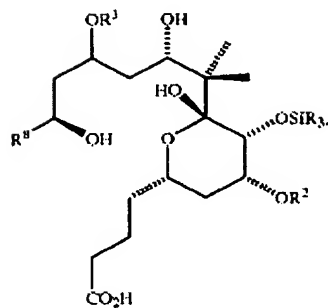
64F



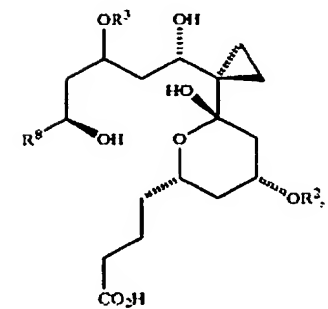
64G



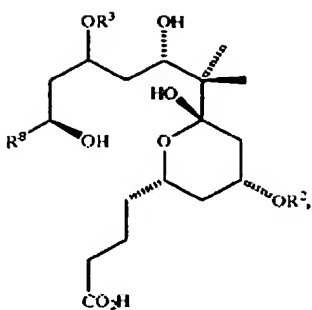
64H



64I



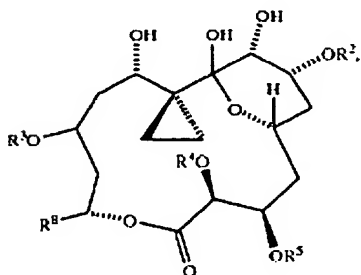
64J



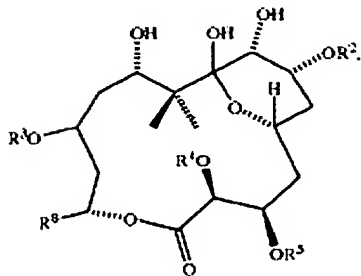
wherein  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$  can be the same or different and are selected from the group consisting of alkyl, and functionalized alkyl, and where  $R^8$  is selected from the group consisting of aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl; and

- (i) reacting the carboxylic acid group and a hydroxyl group of the compound produced in (h) to obtain a macrolactone selected from the group consisting of:

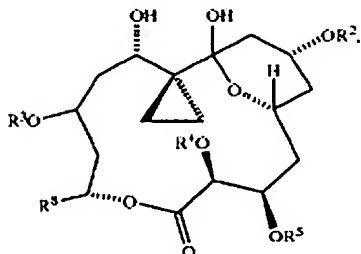
65A

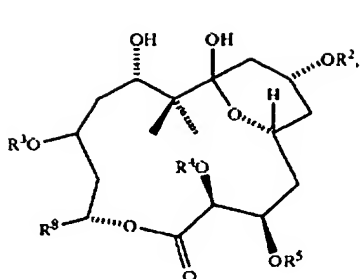


65B

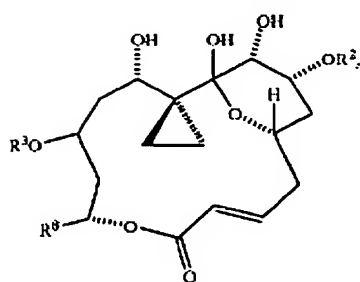


65C

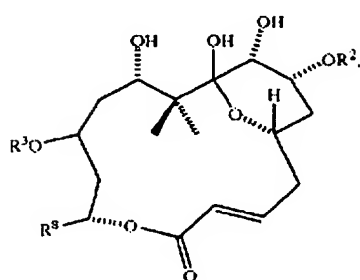




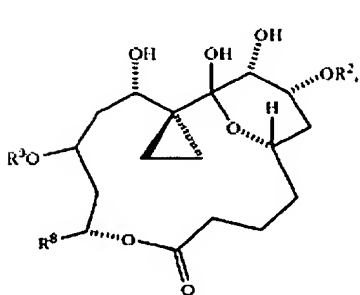
65D



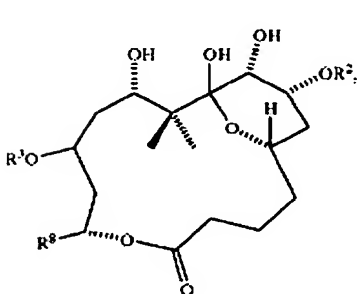
65E



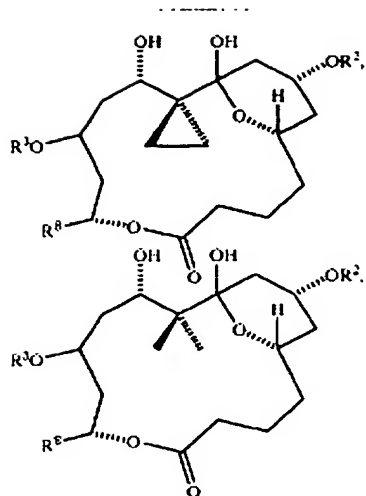
65F



65G



65H



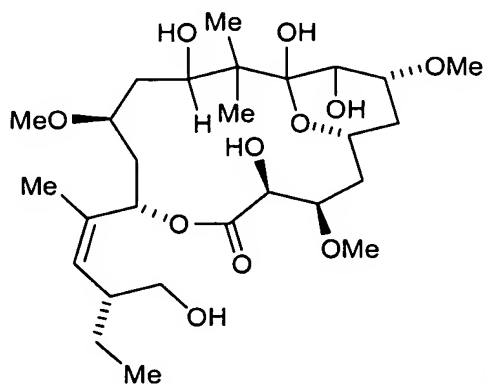
65I

65J

wherein  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$  can be the same or different and are selected from the group consisting of alkyl, and functionalized alkyl, and where  $R^8$  is selected from the group consisting of aryl, heteroaryl, alkyl, functionalized alkyl, alkenyl, functionalized alkenyl, alkynyl, and functionalized alkynyl, wherein the functional group is a heteroatom, a halide, an aryl, or a heteroaryl.

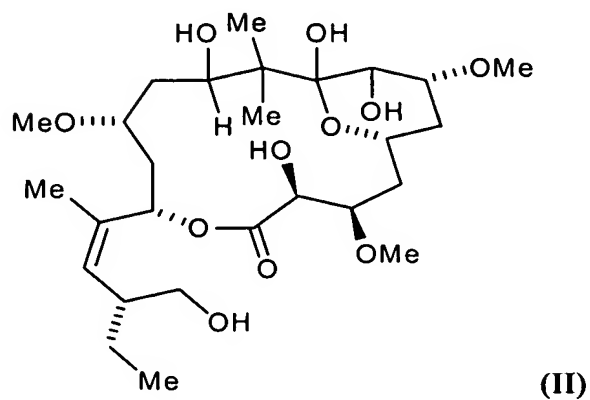
25. (Original) The method of claim 24 wherein the macrolactone is Peloruside A.

26. (Original) The method of claim 24 wherein the macrolactone has the formula:



(I)

27. (Original) The method of claim 24 wherein the macrolactone has the formula:



28. (New) A method of stabilizing microtubule formation in a cell comprising administering to the cell a composition of claim 1 for a period of time and in an amount sufficient to stabilize microtubule formation.